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Notes on Rosaceae—I

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The author has thought it advisable to publish a series of notes on this family, supplementary to his monograph in the North American Flora, vol. 22, beginning on page 239. The reasons for so doing, are :

1. The plan of the North American Flora does not allow many critical notes and explanations, and many facts worthy of presentation must necessarily be omitted on account of lack of space.

2. It is not always evident from the synonymy alone, why a certain name should be adopted in preference to another.

3. It is often desirable to present the author's reasons for his limitation of genera and species.

4. In the North American Flora, only the types of new species are given. It is often desirable to cite some more specimens, which would help in identification of these species, when the types are not accessible.

OPULASTER Medic.

There may be some doubt as to whether this genus was properly published. The original publication consists only of citing *Spiraea opulifolia* L. as a synonym of *Opulaster bullatus* Medic. *Icotorus* Raf., *Epicostorus* Raf., and *Physocarpa* Raf., were published in about the same way. The only name for the genus, which was accompanied by an adequate description, was *Physocarpus* Maxim. ; but this, as well as *Physocarpa* Raf., is invalidated by the older *Physocarpon* Necker,* and *Physocarpum* Bercht. & Presl,† which both have Latin diagnoses. Under the latter, there are also two species named and described. There is, therefore, no alternative left but the retaining of *Opulaster* as the name of the genus, unless the making of a new name is preferred.

* Elem. Bot. 2 : 164. 1790.

† Rostl. 1 : Ranunc. 14. 1823.

In the North American Flora, thirteen species of *Opulaster* are admitted. Of these, nine are previously known species, while four are proposed as new. Of the more recently described species, *Physocarpus michiganensis* Daniels, and *P. missouriensis* Daniels, were placed as synonyms under *O. opulifolius* and *O. intermedius*, respectively. The only distinctive character given by Daniels is the pubescence, which is said to consist of stellate hairs in his two new species; while the two older species should have glabrous leaves or pubescent ones with simple hairs. In none of the species of this genus are the hairs normally simple; only occasionally simple hairs are found. While in *O. opulifolius* the leaves are usually glabrous or nearly so, they are in *O. intermedius* usually quite pubescent, and the hairs commonly branched. If the amount of pubescence should be regarded as a distinctive specific character in *Opulaster*, then *Spiraea ribifolia* Nutt., or *Neillia opulifolia multiflora* Durand, should be regarded as a distinct species from *O. capitatus*, and *O. pubescens* Rydb. from *O. malvaceus* (Greene) Kuntze.

Spiraea ribifolia Nutt., the more glabrate form of *O. capitatus*, has often been confused with *O. opulifolius*, and it is this form that has caused the error of including the Pacific coast in the range of *O. opulifolius*, which is confined to the Alleghanian region. The amount of pubescence is indeed of very little value, and the only reliable characters by which to distinguish the eastern species from its western ally are the long caruncle in the former and the different shapes of the leaves, especially those of the sterile shoots.

As stated above, *O. pubescens* Rydb. is reduced to a synonym of *O. malvaceus*. *O. Ramaleyi* A. Nelson is made a synonym of *O. intermedius*, while in my Flora of Colorado it was regarded as the same as *O. bracteatus* Rydb. The first specimen cited by Nelson belongs to *O. bracteatus*, but it does not agree with the description of the carpels. All the other specimens cited agree with said description, and these belong to *O. intermedius*. *O. Ramaleyi* should therefore be regarded as the same as that species.

The four new species described are: *O. australis*, related to *O. opulifolius* and *O. capitatus*; *O. cordatus*, related to *O. intermedius*; *O. alabamensis*, related to *O. stellatus*; and *O. Hapemanii*, related to *O. monogynus*.

O. australis resembles a small *O. opulifolius*, but it has the short caruncle of the western *O. capitatus*. Its carpels are only about half the size of those of either of the two species mentioned. *Spiraea caroliniana*, mentioned in Marshall's Arbustum, may belong here, but that species was evidently never published. To *O. australis* belong, beside the type given, the following specimens :

North Carolina : Craggy Mountain, July 8 and Sept. 8, 1897, *Biltmore Herbarium 1282 b*.

Virginia : Summit, Stony Man Mountain, Aug. 13, 1901, *E. S. & Mrs. Steele 170* ; Peaks of Otter, June 6, 1890, *A. Brown, T. Hogg, &c.*

In the herbarium of the New York Botanical Garden there is a specimen, received from the herbarium of P. V. LeRoy, and according to the label collected in Mexico by Vischer, in 1838. This has even smaller flowers than *O. australis*. As *Opulaster* is otherwise unknown from Mexico, there was probably a mistake in labeling or a misplacement of labels, and the specimen probably came from some other place. This specimen was therefore ignored when the manuscript for the North American Flora was prepared.

O. cordatus is most closely related to *O. intermedius*, but the two species differ in the form of the leaves and the ranges of the two are widely separated. Besides those of the type collection, given in the Flora, only the following specimens may be doubtfully referred to it :

California : Portola, July, 1903, *Elmer 4804*.

O. alabamensis is somewhat intermediate between *O. stellatus* and *O. intermedius*, but differs from both in the shape of the leaves, especially those of the sterile shoots. To *O. alabamensis* belong the following specimens :

Alabama : Auburn, Sept., 1900, *Lloyd & Earle* ; April 17, 1897, *Earle & Baker* ; July 11, 1896, *Earle & Underwood*.

South Carolina : Sandy river bottom, Clemson College, May 20, 1906, *H. D. House 2175* ; Six Miles Creek, May 19, 1907, *3383*.

O. Hapemanii might be a hairy form of *O. monogynus*, just as *O. opulifolius*, *O. intermedius*, *O. capitatus*, and *O. malvacens* have strongly pubescent and almost glabrous forms. *O. Hapemanii* is, however, so unlike *O. monogynus* in habit that it was thought ad-

visible to give it a distinct name. In many respects it resembles strongly *O. alternans*, and the author has entertained the thought that it might be a 2-carpellary form of that species. The styles in *O. Hapemanii* are, however, more or less spreading, while in *O. alternans* the style is erect, showing that the latter is related to *O. malvaceus*. Besides the type, the following specimens may be referred to *O. Hapemanii*:

Wyoming: Hartville, July 20, 1894, *Aven Nelson* 498.

The following specimens are referred to *O. alternans*:

Utah: Provo, Wahsatch Mountains, June 16, 1902, *Goodding* 1159; Stansbury's Island, June 26, 1850, *Stansbury*.

Nevada: East Humboldt Mountains, *S. Watson*.

Mr. A. A. Heller adopted the name *O. pauciflorus* for *O. malvaceus*. It is true that the original specimens of *Spiraea pauciflora* Nutt. belong to this species; but *S. pauciflora* was never properly published, only mentioned as a synonym under *S. opulifolia pauciflora* in Torrey and Gray's Flora. This variety was, however, primarily based on *S. monogyna* Torr., and hence belongs rather to *O. monogynus*.

SPIRAEA

Spiraea parvifolia Benth. is a very strange and interesting species. Maximowicz referred it to the section (now the genus) *Petrophytum*. It is, however, a true *Spiraea*, notwithstanding the racemose inflorescence and the entire leaves. Neither has it the depressed habit nor the fruit of *Petrophytum*. As far as is known to me, it has been collected but once. By the courtesy of the director of the Kew Gardens, England, the New York Botanical Garden has received an excellent drawing of the type and some fragments of the plant, enough to show its real character. Unfortunately, *S. parvifolia* Benth. is antedated by *S. parvifolia* Raf. I therefore took pleasure in naming the plant *S. Hartwegiana*, after the discoverer.

The species which appeared in the North American Flora under the name *S. Steveni* has had a peculiar history. The older botanists referred it to *S. chamaedryfolia* L., a species with the flowers in simple corymbs, instead of in flat-topped panicles. Later, it was referred, together with *S. corymbosa*, *S. lucida*, *S. splendens*,

and *S. densiflora*, to the Siberian *S. betulifolia*. Dr. E. L. Greene apparently was the first one to point out that the Alaskan species differed from all the other North American relatives in having reflexed sepals. As this is a character found in the original *S. betulifolia* he removed from that species all but the Alaskan plant. The latter, however, differs considerably from Pallas's figure of *S. betulifolia*, and also from Siberian specimens of the same in the Torrey Herbarium. After some search among the literature on the genus, I found that the Alaskan plant had been described by C. K. Schneider. That *S. Steveni* is distinct from *S. betulifolia*, is evident. There may be some doubt, however, whether it is specifically distinct from *S. Beauverdiana* of which Schneider made it a variety. I have seen no specimens of *S. Beauverdiana*, but from the characters given by Schneider, it seems distinct enough.

It is strange that the oldest specific name and publication of the beautiful little shrub of the mountains of California and Oregon, usually known as *S. arbuscula*, should have been overlooked *so generally. Only in a single one of the later German works on woody plants is the name mentioned; and still, *S. splendens* Baumann was amply published.

To *S. Helleri*, I refer, besides the type, the following specimens:

California: Summit, Central Pacific Railroad, July, 1877, *H. Edwards*.

S. japonica is occasionally found escaped from cultivation. I have seen the following specimens:

Pennsylvania: Point Pleasant, July 11, 1898, *C. D. Fretz*; Liberty, September 1, 1906, *J. K. Small*.

S. salicifolia is not found native on this continent. What has gone under that name, is partly *S. latifolia*, and partly *S. alba*. The former is distinguished by its broad, obovate or oblanceolate leaves and almost glabrous inflorescence. When the flowers first open, they are usually more or less pinkish; but in age they become white. Even in "Gray's New Manual," *S. alba* is described as *S. salicifolia*. The two resemble each other in the narrower leaves and the pubescent inflorescence, but differ in the flowers, which in *S. alba* are white instead of deep pink, and in the leaves, which are broader above instead of below or at the middle.

In Canada and northern New England and New York there

is a form of *S. latifolia*, growing in rocky places, especially along streams, with short broad leaves, rounded at the apex and coarsely toothed. It is also much lower than the ordinary *S. latifolia*, and the stems usually die back each year to near the base. This was described as *S. obovata* by Rafinesque. Usually it is very unlike the ordinary *S. latifolia*, but intermediate forms are not infrequent. This form needs more field study.

In the North America Flora, there are five new species proposed. These, together with *S. pyramidata*, the author is inclined to regard as hybrids, except *S. Helleri*. Hybrids are not uncommon in the genus *Spiraea*. *S. Nobleana* was described by J. D. Hooker from a plant raised in a California nursery. It is supposed to be a hybrid between *S. Douglasii* and *S. salicifolia*. As one of the supposed parents is a native of North America and the other is occasionally found spontaneously, and as the plant originated in America apparently without the help of man, it might have been included in the North American Flora, but it was excluded therefrom, like all other garden plants. The native species of probable hybrid origin and their probable parents are as follows:

S. roseata = *S. Menziesii* × *densiflora*.

S. subvillosa = *S. Douglasii* × *densiflora*.

S. tomentulosa = *S. Douglasii* × *lucida*.

S. pyramidata = *S. Menziesii* × *lucida*.

S. subcanescens = *S. tomentosa* × *alba*.

Spiraea tomentulosa, and *S. subcanescens* are known only from the type locality. *S. subvillosa* has been collected also at the following station:

Oregon: Hood River, Cascade Mountains, Aug. 1, 1894, *F. E. Lloyd*.

S. roseata has been collected at the following locality:

Idaho: Near Cooper's, July 20, 1892, *Isabel Mulford*.

PETROPHYTUM AND KELSEYA

It is gratifying to the author, that C. K. Schneider,* a rather conservative dendrologist, has independently raised these to generic rank. The genera are related to *Spiraea*, but are distinguished by the peculiar habit and by the structure of their fruits. To

* Handb. Laubh. 1: 484, 485. 1905.

merge them into *Eriogynia*, or *Luetkea*, as was done by S. Watson, O. Kuntze, and E. L. Greene, is rather indefensible; and it is strange that A. A. Heller, who recognized *Petrophytum caespitosum* and *P. elatior* as representing a distinct genus, should transfer the closely related *Spiraea cinerascens* to *Luetkea*. In the Flora are recognized five species of *Petrophytum*. Of these one, viz., *P. acuminatum*, is proposed as new. It is known only from the type locality. *Kelseya* is monotypic.

LUETKEA

It is doubtful which of the two names, *Luetka* or *Eriogynia*, is the older. Otto Kuntze, when adopting *Luetkea* instead of *Eriogynia*, claimed that the former was published in 1831 and the latter in 1833. It is most probable that they were both published in 1832. The part of the Memoirs of the Academy of St. Petersburg in which Bongard's paper on the vegetation of Sitka was published, appeared in August, 1832. Whether any separates were distributed before that time we can not ascertain. *Eriogynia* was published in 1832, apparently in the later part of the year, but the exact date is unknown. For that reason I did not change the now accepted name of the genus.

The generic name was originally spelled *Lütkea*. As the German *ü* is not found in Latin, it is usually replaced by *ue*. *Luetkea* is therefore preferable to *Lutkea*.

ARUNCUS

The plants of this genus native to the eastern United States have invariably much smaller fruit than the European plants. The plant common in the Alleghanies has thinner, more glossy leaves and rather thick fruit. It is *Aruncus sylvestris americanus* of Maximovicz, but unfortunately the synonym, *Spiraea Aruncus americana* Pers., from which Maximovicz adopted the name, is very doubtful. It may belong, as well as all the synonyms under *A. alleghanensis*, except the last, to *Astilbe* instead of *Aruncus*. Hence a new name was proposed.

The *Aruncus* of the Mississippi valley has rather thick, densely pubescent leaves and more slender fruit. It was described under the name of *A. pubescens*.

The plant of northwestern North America is much closer to the European *Aruncus Aruncus*, and differs practically only in the long-acuminate leaflets. If any of the American species of *Aruncus* should be reduced to the Old World species, it should be *A. acuminatus*. *A. Aruncus* is common in cultivation and rarely escaped.

To these four species is to be added an East Siberian species *A. kamchaticus*, which has been collected on *Attu*, the most westerly of the Aleutian Islands.

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